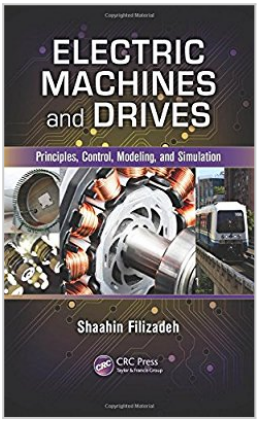

Electric Machines and Drives: Principles, Control, Modeling, and Simulation

By Shaahin Filizadeh

Electric Machines and Drives: Principles, Control, Modeling, and Simulation By Shaahin Filizadeh

Electric machines have a ubiquitous presence in our modern daily lives, from the generators that supply electricity to motors of all sizes that power countless applications. Providing a balanced treatment of the subject, **Electric Machines and Drives: Principles, Control, Modeling, and Simulation** takes a ground-up approach that emphasizes fundamental principles. The author carefully deploys physical insight, mathematical rigor, and computer simulation to clearly and effectively present electric machines and drive systems.

Detailing the fundamental principles that govern electric machines and drives systems, this book:

- Describes the laws of induction and interaction and demonstrates their fundamental roles with numerous examples
- Explores dc machines and their principles of operation
- Discusses a simple dynamic model used to develop speed and torque control strategies
- Presents modeling, steady state based drives, and high-performance drives for induction machines, highlighting the underlying physics of the machine
- Includes coverage of modeling and high performance control of permanent magnet synchronous machines
- Highlights the elements of power electronics used in electric drive systems
- Examines simulation-based optimal design and numerical simulation of dynamical systems

Suitable for a one semester class at the senior undergraduate or a graduate level, the text supplies simulation cases that can be used as a base and can be supplemented through simulation assignments and small projects. It includes end-of-chapter problems designed to pick up on the points presented in chapters and develop them further or introduce additional aspects. The book provides an understanding of the fundamental laws of physics upon which electric machines operate, allowing students to master the mathematical skills that their modeling and analysis requires.

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